



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,412	07/31/2003	Andrea Acquaviva	200208134-1	4371
7590 HEWLETT-PACKARD COMPANY Intellectual Property Administration P.O. Box 272400 Fort Collins, CO 80527-2400			EXAMINER RAHMAN, FAHMIDA	
			ART UNIT 2116	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/11/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/632,412	ACQUAVIVA ET AL.	
	Examiner Fahmida Rahman	Art Unit 2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 October 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,3-12,14-18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,3-12,14-18 and 20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application (PTO-152)
6) Other: _____

DETAILED ACTION

1. This action is in response to communications filed on 10/25/2006.
2. Claims 1, 3-7, 10, 12, 14-16 have been amended, no new claims have been added, claims 2, 13, 19 have been cancelled. Therefore, claims 1, 3-12, 14-18, 20 are pending.

Claim Objections

3. Claims 3-11, 14-15, 17-18, 20 are objected to because of the following informalities:

Claims 3-11 recite "An operating system" in the preamble, although the parent claim 1 recite "A system" in the preamble. Claim 1 recites a real time operating system in line 5. However, preamble of claim 3 requires API call to be a part of real time operating system, which is not required in the operating system of parent claim 1. For the rest of the action it is assumed that "The system as defined in claim" is intended in claims 3-11.

Claims 14-15 recite "An integrated power management system as defined in claim 12" in the preamble. The parent claim 12 does not recite any such limitation. For the rest of the action, it is assumed that "The real time power management system as defined in Claim 12" is intended in claims 14-15.

"A method as defined in claim 16" recited in claims 17-18, 20 should be "The method as defined in claim 16" as method is already defined in claim 16.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 12, 14-18, 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites “a plurality of power states” in lines 4-5. It is not clear whether it is same or different from “a plurality of power states” in lines 3-4. For the rest of the office action, it assumed that same relationship was intended.

Claims 14-15 depend on claim 12. Therefore, they carry the same ambiguity of claim 12.

Claim 16 recites “a plurality of power states” in line 4. It is not clear whether it is same or different from “a plurality of power states” in line 3. For the rest of the office action, it assumed that same relationship was intended.

Claims 17-18, 20 depend on claim 16. Therefore, they carry the same ambiguity of claim 16.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3-9, 11-12, 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakajima (US Patent 6442699).

For claim 1, Nakajima teaches the following limitations:

A system comprising: a hardware platform (Fig 12) having a processor (1200_N in Fig 12) and at least one hardware resource (1200_1.....1200_8); a real time operating system (1005, 1006 and 1007; lines 59-61 of column 18) supporting a plurality of software applications running on the hardware platform (1000_1....1000_M); a power manager layer (101, 102, 103, 104); said power manager layer being arranged to receive real time input from at least one of the plurality of software applications (lines 40-46 of column 19), wherein the real time input includes the at least one of the plurality of software applications informing

the power manager layer, through an API call embedded in the at least one of the plurality of software applications (lines 52-58 of column 18), of a determination made by the at least one of the plurality of software applications of a change in a current processor or hardware resource requirements of the at least one of the plurality of software applications (Fig 31 shows the list of API calls, which mentioned start/end of the software application. This change represents the change of resource requirement of the processor/hardware. Fig 15-Fig 22 show the change in resource requirement determined by the application program for changing the status of application program; line 64 of column 24 through line 13 of column 25); determine a power management adjustment using the received real time input (Fig 23); exchange information with at least one of said processor and said at least one hardware resource, wherein said information includes the determined power management adjustment (lines 1-10 of column 23), to implement real time power management responsive to the real time input, wherein the real time power management includes changing the power state of at least one of said processor and at least one hardware resource in response to the change in the current processor or hardware resource requirement of the at least one of the plurality of software applications (lines 5-10 of column 23).

For claim 3, note Fig 31, which shows that API call notifies the start of activation process.

Art Unit: 2116

For claim 4, note Fig 2, where the status of application programs (i.e., utilization profile) is listed. The status signal represents utilization profile that is further used to determine resource requirements of the applications. Therefore, resource requirement is characterized by utilization profile, which is transmitted to power manager with a start call.

For claim 5, note Fig 31, which shows “Display Start API”. This API notifies that software application program 2 (“word processor” in Fig 2) requires the display.

For claim 6, 1100_1....1100_N is the hardware abstraction layer. Information is exchanged between power manager layer and hardware abstraction layer by means of application-interface calls (1200_1 to 1100_1 to 1007 to 1006 to 1005 to 1000_1 to 1005 to 101; lines 32-35 of column 19). 1100_N actuates CPU in accordance with calls EA_1 or AP_1.

For claim 7, 1007 is the driver layer. Information is exchanged between power manager layer and driver layer by means of API call (1007 to 1006 to 1005 to 1000_1 to 1005 to 101; lines 32-35 of column 19).

For claim 8, Fig 15-Fig 22 show the processor and hardware state power state selection mode.

For claim 9, the tables shown in Fig 15-Fig 22 are stored in 103.

For claim 11, driver layer 1007 exchanges information with hardware abstraction layer 1100_1-1100_N by means of program interface call as device driver 1100_1 – 1100_N is a software program. The devices are controlled in accordance with such call.

For claim 12, Nakajima teaches the following limitations:

A real time power management system (abstract) for a processor-driven hardware platform (1200_N in Fig 12) for supporting a plurality of software applications (1000_1...1000_M), said platform having at least one hardware resource (1200_1...1200_N) wherein said processor is characterized by a plurality of power states and said at least one hardware resource is characterized by a plurality of power states (Fig 5-Fig 11), said power management system comprising, in combination: a) an operating system (1005-1007) for controlling said processor and said at least one hardware resource (Fig 12); b) said operating system including a power manager layer (1005-1007) arranged to receive real time input from the plurality of applications (AP_1 to AP_M in Fig 12 are real time input as shown in Fig 2), wherein the real time input includes the at least one of the plurality of the software applications informing the power manager layer, through an API call embedded in the at least one of the plurality of software applications (Fig 31), of a change in a current processor or hardware resource requirements of the at least one of said plurality of software applications running on the hardware

platform (Fig 2 shows that the real time input includes display start, save process starts, which represents the change of current resource requirements as display starts requires display to be activated); **select change of at least one of a processor power state and a power state of said at least one hardware resource** (lines 5-10 of column 23) **in response to the change in the current processor or hardware resource requirement of the at least one of the plurality of software applications** (Fig 4).

For claim 14, note Fig 31, which shows that API call notifies the start of activation process.

For claim 15, note Fig 31, which shows "Display Start API". This API notifies that software application program 2 ("word processor" in Fig 2) requires the display.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima (US Patent 6442699).

For claim 10, Nakajima teaches receiving call from driver layer including resource requirement containing power state instructions from power manager layer and transmit the information to hardware abstraction layer (Fig 12). However, Nakajima does not explicitly mention about API call. Examiner takes an official notice that communicating with API call in driver and hardware abstraction layer is well known in the art. One ordinary skill would implement API interface in driver and hardware abstraction layer, since API provides modularity to the system.

7. Claims 16-18, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima (US Patent 6442699), in view of Oehler (US Patent Application Publication 2004/0003303).

For claim 16, Nakajima teaches the following limitations:

A method for controlling power consumption (abstract) in a hardware platform (Fig 12) responsive to information from a plurality of software applications (1000_1 to 1000_M in Fig 12), said platform including a processor (1200_N) having a plurality of power states (Fig 5-Fig 11) and at least one hardware resource characterized by a plurality of power states (Fig 5-Fig 11), said method comprising the steps of: organizing said operating system (Fig 12) into a kernel (1006), a driver layer (1007); applying one real time input from said at least one of the plurality of software applications to a power manager layer (1000_1...1000_M to 1005, 1006 to 101, 102, 103, where 101, 102, 103, 104 is the power manager layer) wherein real time input includes the at least one of the plurality of the software applications

informing the power manager layer, through an API call embedded in the at least one of the plurality of software applications (Fig 31), of a change in a current processor or hardware resource requirements of the at least one of the plurality of software applications running on the hardware platform (Fig 2 shows that the real time input includes display start, save process starts, which represents the change of current resource requirements as display starts requires display to be activated); determining a power management policy in said power manager layer using said real time input (102 and 104 determines power management policy); communicating said power management policy from said power manager layer to said processor or said at least one hardware resource (SVA1 to 1007; lines 57-66 of column 19); and change of at least one of a processor power state and a power state of said at least one hardware resource (lines 5-10 of column 23) in response to the change in the current processor or hardware resource requirement of the at least one of the plurality of software applications (Fig 4 shows that the service power rate allocation depends on operation status detection).

Although Nakajima's operating system is organized with kernel and driver layer, the power manager layer is shown outside of the OS (Fig 12). The hardware abstraction layer (1100_1.....1100_N) is also shown outside of OS. Oehler teaches a system where power manager layer (313) and hardware abstraction layer (315) are part of OS.

It would have been obvious for one ordinary skill in the art at the time the invention was made to combine Nakajima and Oehler. One ordinary skill would be motivated to include hardware abstraction layer within OS, since device drivers are typically part of OS (as devices are controlled by OS). One ordinary skill would be motivated to include power management layer within OS, since OS driven power management is well known in the art for its dynamic power management capability.

For claims 17 and 18, 102 of Nakajima calculates the power state of the CPU and hardware.

For claim 20, Nakajima teaches API interface with power management layer. However, Nakajima does not explicitly mention about API interface in driver and hardware abstraction layer. Examiner takes an official notice that API interface in driver and hardware abstraction layer is well known in the art. One ordinary skill would implement API interface in driver and hardware abstraction layer, since API provides modularity to the system.

Response to Arguments

Applicant's arguments filed on 10/25/2006 are moot in view of new grounds of rejections.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fahmida Rahman whose telephone number is 571-272-8159. The examiner can normally be reached on Monday through Friday 8:30 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rehana Perveen can be reached on 571-272-3676. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fahmida Rahman
Examiner
Art Unit 2116



REHANA PERVEEN
SUPERVISORY PATENT EXAMINER
1/8/2007